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# PATENT SPECIFICATION



Application Date: Dec. 3, 1920. No. 34,227/20.

175,797

Complete Accepted: Mar. 2, 1922.

## COMPLETE SPECIFICATION.

### Sheet Metal Jointing Piece for Wooden Angle-joints.

I, RENE EMILE TROTTIER, of 84, rue de la Republique, Puteaux (Seine), France, a citizen of the Republic of France, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention consists in cramps for assembling angle pieces of timber of any section, made of a single piece of sheet metal folded so as to form wings adapted to be driven into the timber so as to securely clamp the same together at the same time obtaining for the timber frames so constructed an absolute rigidity and permanency of shape.

This cramp can be manufactured in a very simple and very economical manner by means of a piece of metal sheeting cut according to a special pattern and subsequently folded in a suitable manner so as to constitute a middle portion the shape of which is generally triangular, provided with two folded wings terminated by pointed portions folded with respect to these wings. The middle flat portion of the cramp is made to engage in two corresponding saw-cuts provided at the end of the two pieces of timber which it is required to assemble together, the two wings being applied against the external faces of these pieces and the pointed portions which terminate them engaging two saw-cuts parallel to those receiving the middle section; the purpose of the whole arrangement is to secure a firm connection between the pieces of timber so assembled, together with a suitable folding of the lateral portions and of the pointed ends of these portions on the internal faces of the assembled pieces of timber.

It will be understood that the cross-

[Price 1/-]

piecing of the timber piece constituted in this manner by the transverse portion of the cramp and by the two transverse parts constituted by the wings, combined with the grip of the pointed ends of these transverse parts, secures a perfect rigidity of the assembled timber and prevents any deformation taking place.

This type of cramp is equally adapted to the assembling of pieces of timber of any section, for instance flat, square, rectangular, circular or oval; it can be particularly utilised for securing in position the parts of chests or boxes of all kinds, for the construction of drawers or pieces of furniture, for assembling timbering in mines or any kind of frames, and generally for all kinds of angle joints, either rectangular, acute or obtuse.

Referring to the appended drawings which show in detail the cramp which is the object of this invention and the manner in which it is used for assembling timber:

Fig. 1 is a plan of the piece of sheet metal cut so as to constitute the cramp for assembling timber at right angles. Figs. 2, 3, 4, and 5 are respectively a side view, and end view, from the inside, an end view from the external side and a plan of the cramp; Fig. 6 is a perspective view of the cramp.

Figs. 7 and 8 are respectively the front end elevation of a mining timber frame assembled by means of the cramp which is the object of the invention.

Fig. 9 is a part plan of the box assembled by means of the cramp; Fig. 10 being a vertical section of the box.

Figs. 11 to 16 show a different method of construction of the cramp which forms the object of the present invention; Fig.

11 is a plan of the piece of sheet metal from which it is constructed; Figs. 12, 13, 14, 15 and 16 are, respectively, views similar to those of Figs. 2 to 6 of the former pattern.

Figs. 17 and 18 show the assembling of the corner of a box by means of the cramp constructed according to the method shown in the Figs. 11 to 16.

As it is seen on Fig. 1 the piece of cut sheet metal which is used in the construction of the cramp comprises a triangular element *a* intended to constitute the middle portion, two lateral elements *b* and *b'* forming the wings and two pointed tongues *c* and *c'* terminating these wings; the middle portion *a* is moreover split along its axis, at *d*. This piece of cut sheet metal is subsequently folded along the lines shown at *e* on Fig. 1, so as to constitute the cramp shown in Figs. 2 to 6.

In the arrangement shown in Figs. 7 and 8, where the cramp is utilised for assembling together timber frames for mining purposes, the lateral uprights *f* and the upper and lower cross pieces *g* of the frame are cut bevel at the ends, as is seen at *h* so as to secure the proper cross-fitting of the whole. The middle portion *a* of each cramp is made to engage two saw-cuts provided in the ends of the pieces to join together and the points of the portions on either side of the slit *d* are turned down respectively on either side of the internal face of the uprights *f* and of the cross pieces *g* as is seen on the drawing. The wings *b* and *b'* are applied on the external face of the timber elements forming the frame, and the pointed tongues *c* and *c'* are engaged in saw-cuts parallel to those of the middle portion also provided in the pieces to be assembled together. The whole of the frame is cross-connected in this manner in every direction and is therefore adapted to support without deformation extremely heavy loads.

In the manner of carrying out the invention shown in Figs. 9 and 10, which illustrate the assembling of a box with flat walls, the said walls are assembled at right angles without bevelling, and the two ends of the walls to join together are provided, as in the former arrangement, with three saw-cuts adapted to receive the middle portion of the cramp and the tongues *c* and *c'* respectively. The manner of assembling the pieces would however be the same if the ends of the walls which fit together were bevelled. The two wings *d* and *d'* are here applied respectively on the external faces of the

lateral wall *i* and of the bottom wall *j* of the box, the pointed tongues *c* and *c'* being also engaged in the corresponding saw-cuts. The pointed parts on either of the slit of the middle portion of the cramp are, as before, bent down on the internal faces of the walls *i* and *j*. The assembling so obtained is absolutely rigid and non-deformable.

According to the depth of the box or the size of the walls which are to be assembled together, one or more of the above described cramps will be used.

In the manner of carrying out the invention shown on Figs. 11 to 18, the piece of cut metal is similar to that of the previous pattern, but in this case the folding of the tongues *c* and *c'* on the wings *b* and *b'* is performed along the lines *e* (Fig. 11) closer to the middle portion *a*. Besides this, the tongues *c* and *c'* are in this case split at their external edge, as seen at *k*, so as to be adapted to be bent down after assembling on the internal face of the walls to be joined together, in the same manner as the points of the two parts of the middle portion *a*. On Figs. 17 and 18 which are respectively a plan and a vertical section of a corner of a box assembled by this method, the manner in which the ends of the parts of the tongues *c* and *c'* are bent down on the internal face of the walls *i* and *j* of the box is clearly shown, these supplementary bends contributing to further increase the whole assemblage's rigidity and strength. This arrangement is particularly suitable in cases where the walls to be put together are of moderate thickness.

It will be understood that this type of cramp can be used as explained in the various methods of carrying out the invention mentioned above as examples, to assemble together all kinds of wooden elements to be joined either at right angles or at acute or obtuse angles. In the latter case the cut piece of sheet metal is rectangular instead of being square so that the wings after being folded make with one another the required angle so as to be applied exactly against the walls which it is required to secure together.

As may be seen on Figs. 1 and 11 the piece of cut sheet metal from which the cramp is constructed can be obtained without any serious waste of metal from any strip of sheet iron or from any sheet of metal; any suitable sheet metal waste can be utilised advantageously for the purpose, thus enhancing the economy realised by this system of construction.

I am aware that it has been proposed to

use jointing means for wood and similar material, consisting of a single sheet metal piece provided with projections adapted to be bent once to form flanges, or twice towards the same side of the sheet; and that it has also been proposed to use such a sheet metal piece the corners of which are bent at right angles.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A cramp for timber joints constructed from one piece of sheet metal, folded so as to constitute a middle portion and two lateral portions adapted to be folded on opposite sides of the said sheet, each twice in the same direction thereby providing folded pointed tongues, said middle portion being adapted to engage two corresponding saw-cuts in the timber pieces to be joined, said lateral

portions being applied against the external faces of the said timber pieces in which the pointed tongues of the cramp are made to penetrate in saw-cuts provided for the purpose or by other means.

2. A cramp as claimed in Claim 1, further characterised in that the middle section is provided with a slit so as to have two pointed parts adapted to be bent down against the internal face of the pieces to be joined.

3. A cramp as claimed in Claims 1 and 2, further characterised in that the pointed tongues are provided with a slit on the external edge so as to have two additional pointed parts adapted to be bent down against the internal face of the pieces to be joined.

Dated this 3rd day of December, 1920.

MEWBURN, ELLIS & Co.,  
70—72, Chancery Lane, London, W.C. 2,  
Chartered Patent Agents.

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Fig. 1

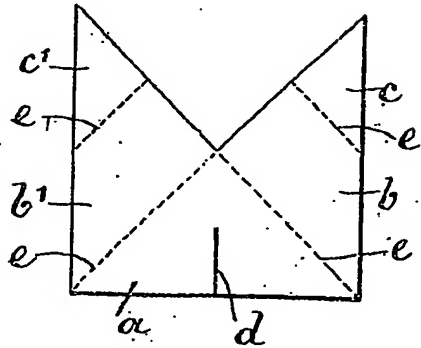


Fig. 2

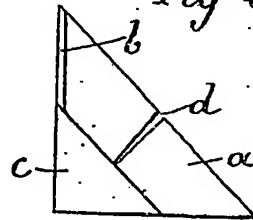


Fig. 3

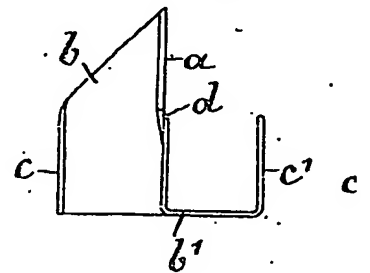


Fig. 5

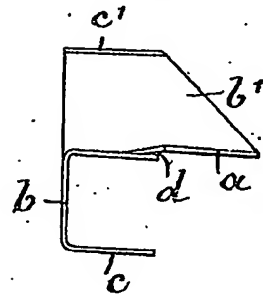


Fig. 7

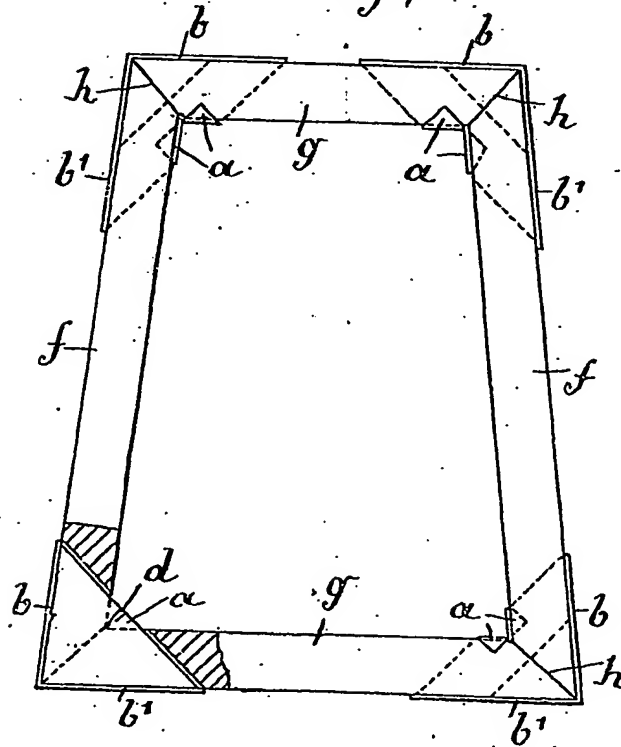
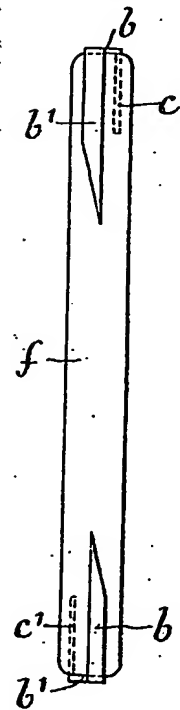


Fig. 8



b.

i.

b.

Fig. 3

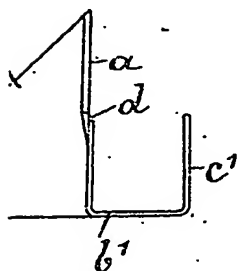


Fig. 4

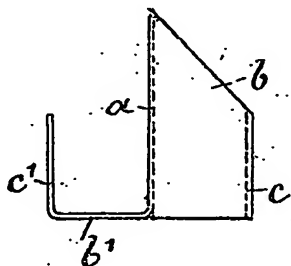


Fig. 6

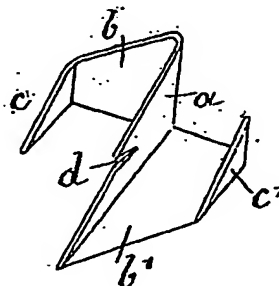


Fig. 10

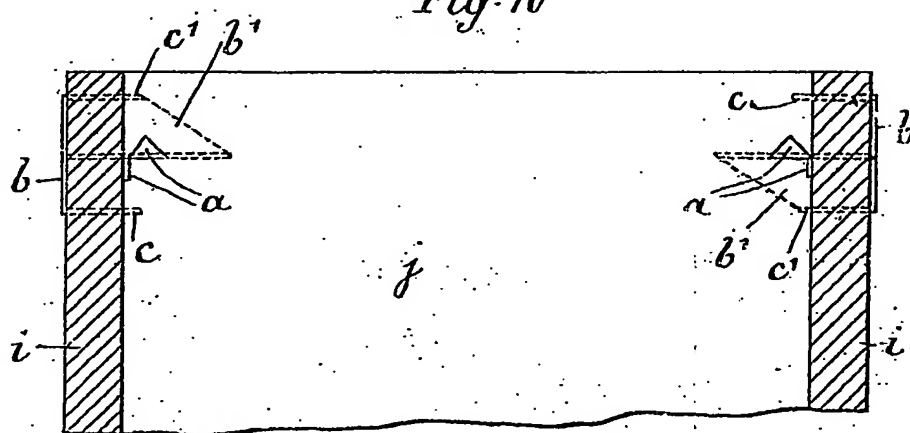


Fig. 8

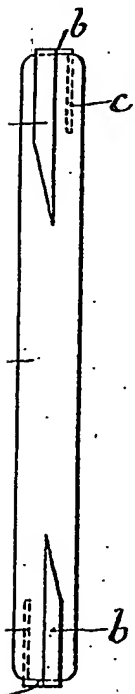


Fig. 9

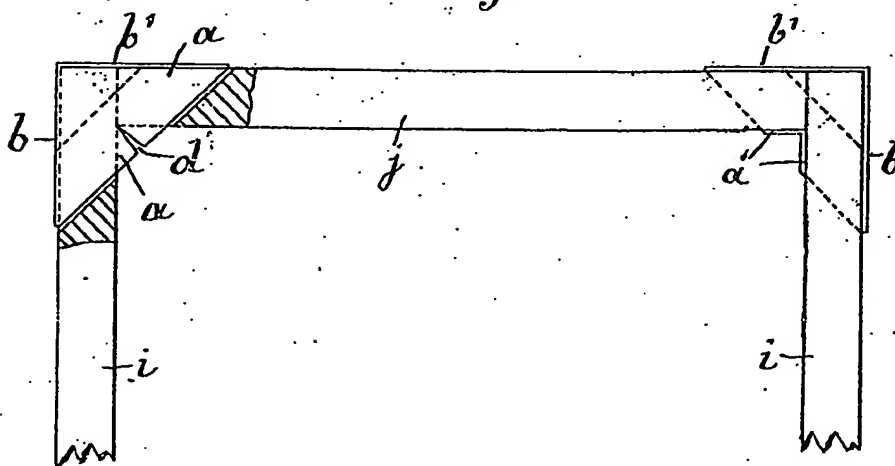


Fig. 1

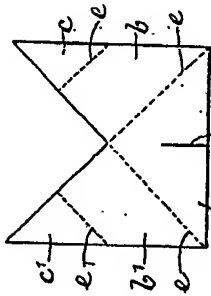


Fig. 2

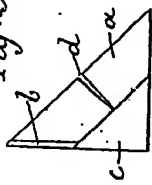


Fig. 3

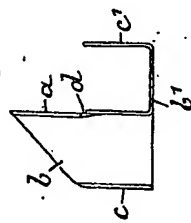


Fig. 4

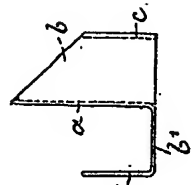


Fig. 6

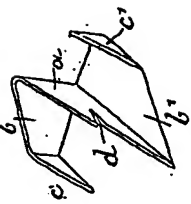


Fig. 5

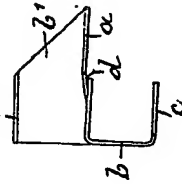


Fig. 10



Fig. 7

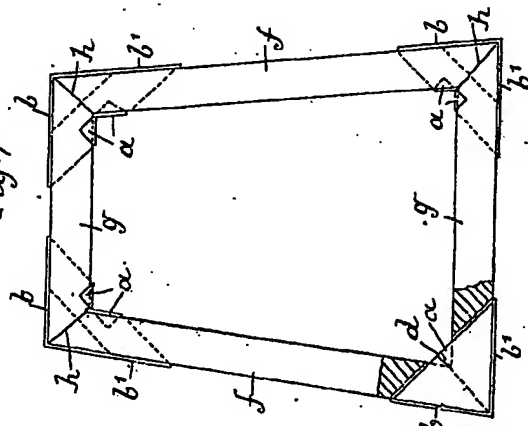


Fig. 8

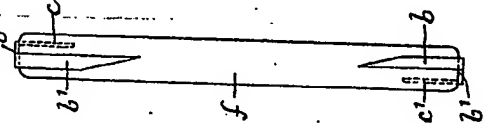
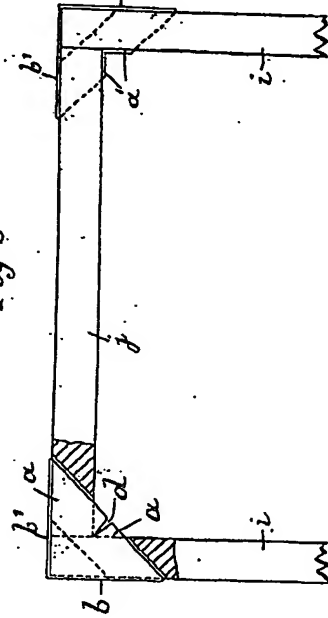


Fig. 9



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